

Distinguished Lecture Series talks to explore calcium signaling

By Sonika Patil

In April, the NIEHS Distinguished Lecture Series will highlight calcium signaling with two talks hosted by lead researcher **James Putney, Ph.D.**, head of the NIEHS Calcium Regulation Group. Both talks will take place from 11:00 a.m. to 12:00 p.m. in Rodbell Auditorium.

Michael Cahalan, Ph.D., will present the first talk April 9 titled “Cracking CRAC — the Calcium Release-activated Calcium Channel of the Immune System.” In the second talk April 30, Katsuhiko Mikoshiba, M.D., Ph.D., will explore “Role of IP₃ [Inositol 1,4,5-trisphosphate] Receptor Signaling in Development, Cell Function, and Diseases” in the 2013 Dr. Martin Rodbell Lecture.

According to Putney, sometimes calcium signals come from inside the cells and sometimes across the plasma membrane. “Cahalan is highly regarded for discovering very new and unusual types of calcium channels in the plasma membrane that are specifically very important in the immune system,” explained Putney. Mikoshiba discovered the most widely expressed interior calcium channels in the endoplasmic reticulum that release calcium.”

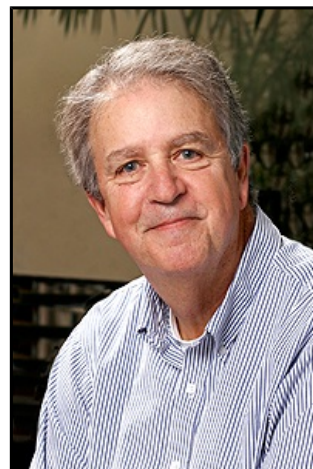
Both speakers have been honored at the highest levels for their accomplishments. Among other honors, Cahalan is a member and Mikoshiba is a foreign associate of the National Academy of Sciences.

Giants in the field of calcium signaling

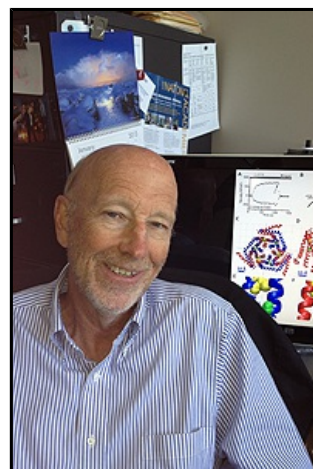
Cahalan (http://www.faculty.uci.edu/profile.cfm?faculty_id=2150) is a renowned researcher and professor at the University of California, Irvine (UCI), who is known for his contributions in the area of ion channels and calcium signaling in T lymphocytes. He completed his graduate studies at the University of Washington and a postdoctoral fellowship at the University of Pennsylvania, before joining UCI in 1977, where he has held various positions. Cahalan is currently a distinguished professor and chair of the UCI Department of Physiology and Biophysics.

Much of Cahalan’s work is focused on investigating the immune responses at the single cell level, using approaches such as patch clamp to characterize ion channels, and a variety of imaging techniques to monitor motility, cellular interactions, calcium signaling, and gene expression. Cahalan is also highly regarded for his discoveries of the STIM and Orai proteins and their role in store-operated calcium channels.

Mikoshiba (<http://www.brain.riken.jp/en/faculty/details/29>) is senior team leader of the Laboratory of Developmental Neurobiology at RIKEN Brain Science Institute in Japan. He earned his M.D. in 1969 and a Ph.D. in 1971, before becoming a faculty member at the Keio University School of Medicine. Mikoshiba has authored a number of publications, has served as an editorial board member for more than 20 journals, and is a recipient of several highly distinguished honors and awards.



Putney described Cahalan and Mikoshiba as giants in the field of calcium regulation. Both have made seminal discoveries that have advanced understanding of cellular signaling. (Photo courtesy of Steve McCaw)



Cahalan is highly regarded for his discovery of calcium channels in the plasma membrane. (Photo courtesy of Michael Cahalan)

Mikoshiba's lab studies IP₃ and calcium signaling specifically in brain and brain cells. Mikoshiba discovered and cloned IP₃ receptor as a calcium channel in the endoplasmic reticulum in early 1990's and, since then, has demonstrated that IP₃ receptor plays a highly crucial role in various physiological phenomenon, such as dorso-ventral axis formation in early development, synaptic plasticity, dendrite formation in neurons, fertilization, and endocrine secretion.

The Rodbell Lecture, now in its 15th year, is one of two named talks in the annual NIEHS Distinguished Lecture Series. It honors former NIEHS Scientific Director and Nobel Laureate Martin Rodbell, Ph.D., who presented the first talk in the series shortly before his death in 1998. Rodbell shared the 1994 Nobel Prize in Physiology or Medicine with Alfred Gilman, Ph.D., for the discovery of G-proteins, signal transducers that transmit and modulate signals in cells to control fundamental life processes.

(Sonika Patial, D.V.M., Ph.D., is a fellow in the NIEHS Laboratory of Signal Transduction.)



Mikoshiba discovered calcium channels expressed on the endoplasmic reticulum inside the cell. (Photo courtesy of Katsuhiko Mikoshiba)

The Environmental Factor is produced monthly by the [National Institute of Environmental Health Sciences \(NIEHS\)](http://www.niehs.nih.gov/) (<http://www.niehs.nih.gov/>), Office of Communications and Public Liaison. The content is not copyrighted, and it can be reprinted without permission. If you use parts of Environmental Factor in your publication, we ask that you provide us with a copy for our records. We welcome your [comments and suggestions](#). (bruskec@niehs.nih.gov)

This page URL: http://www.niehs.nih.gov/assets//Sites/NIEHS_eFactor/2013/4/
NIEHS website: <http://www.niehs.nih.gov/>
Email the Web Manager at webmanager@niehs.nih.gov